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Third Site DNAPL Containment Area Supplemental Sampling Plan - Phase 2 - Revised

Prepared for

Matthew J. Ohl.
USEPA

Prepared by

Geosyntec Consultants International Inc.
130 Stone Road West
Guelph, Ontario N1G 3Z2

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Geosyntec
consultants

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1. INTRODUCTION

On behalf of the Trustees of the Third Site Trust Fund, Geosyntec Consultants (Geosyntec), with the assistance of Ramboll, have prepared this Supplemental Sampling Work Plan (Phase 2) for the Dense Non-Aqueous Phase Liquid (DNAPL) Containment Area for the Third Site (or Site) located at 985 S. US Highway 421 in Zionsville, Indiana. The Phase 2 Supplemental Sampling Work Plan, submitted to EPA on May 15, 2020, provides an update on Phase 1 sampling activities and establishes methodologies and proposed locations of soil core boreholes and groundwater samples in the DNAPL Containment Area. This Phase 2 Supplemental Sampling Work Plan - Revised has been modified to reflect comments received by the EPA via email on June 2 and June 9, 2020.

1.1 Purpose

The strategy to evaluate residual contaminant mass in the DNAPL Containment Area (the Cell) following treatment Electric Resistive Heating (ERH), is based on a multiple lines of evidence approach, including:

Phase 1 (Completed the week of April 27, 2020)

1) *Groundwater sampling from existing wells in the Cell.* This sampling provided screening level data for dissolved phase mass distribution at 14 sampling locations in the Cell, including ERH extraction wells and groundwater monitoring wells. The selected wells were distributed across the area of the Cell that has not met the ERH remedy compliance criteria. These wells include extraction and performance installations that are screened between 4 and 40 ft below ground surface.

Phase 2 (presented in this Sampling Plan)

2) *Soil sampling at 15 locations in the Cell.* This sampling will provide detailed vertical profiling from targeted locations in cell. The sampling locations include sites of former soil samples and new locations that are determined based on the results of the Phase 1 groundwater sampling. The soil cores will provide quantitative data of soil and porewater concentrations to assess whether residual contaminant mass is present in the cell. The depth range of the soil sampling is from 4 to 46 ft below ground surface.

3) *Groundwater sampling from the lower section of the soil core boreholes*. This sampling will provide groundwater samples from the zone below the depth of the

performance and extraction wells. These samples will provide dissolved phase data for the depth interval from approximately 40 to 46 ft below surface as noted below.

Results from the proposed investigations in this work plan will inform recommendations for potential future remedial actions.

1.2 Objectives

The specific objectives of the proposed work are to:

- Develop a current understanding of contaminant distribution within the DNAPL containment area following ERH, specifically:
    - The current lateral and vertical distribution of contaminants in the DNAPL containment area; and,
    - Potential mass in the upper portion of the Lower Till underlying the DNAPL containment area.
- Identify the source of contaminant mass detected in wells P-1 and P-2 following ERH, specifically, whether there is residual untreated mass within the ERH target treatment area or whether mass is entering the ERH treatment volume from the underlying Lower Till.

2. PHASE 1 – GROUNDWATER SAMPLING FROM EXISTING WELLS

The Phase 1 groundwater sampling activities provided screening level groundwater data from existing wells and required only limited alteration to the ERH infrastructure at the site to access the existing ERH extraction and monitoring wells. These data provide an understanding of the current spatial distribution of dissolved phase VOCs in the Cell, which inform the design and optimization of the soil sampling presented in Section 3.

2.1 Methods

The depth to water was measured in performance monitoring well P1 on April 26, 2020 to confirm current water elevation in the DNAPL Containment Area and aid in finalizing the depths to collect groundwater samples from the 14 wells sampled as part of Phase 1.

Samples were collected from the following wells: P-1, P-2, X-B3, X-B4, X-C1, X-C3, X-C4, X-D1, X-D2, X-D3, X-D4, X-E1, X-E2, and X-E3 (**Figure 1**). Following gauging depth to water in the 14 wells, two HydraSleeve™ samplers were deployed in series in

each of the wells; one sampler was placed so the top of the sampler was approximately 3 ft from the bottom of the well and the second sampler was deployed such that the top of the sampler was approximately 3 ft below groundwater elevation. In general, samples were collected from 25 ft bgs and 37 ft bgs in each of the wells. HydraSleeve™ samplers were deployed and the water column allowed to recover for approximately 24-hours and then groundwater samples were collected in accordance with the HydraSleeve™ Standard Operating Procedures (Geosyntec, February 2020). In addition, following the collection of the grab groundwater samples, groundwater samples were also collected using Ramboll's Site standard low-flow sampling methods from wells P-1, P-2, X-C1, X-D1, X-E1, and X-E2 to obtain data from a blended screen interval and for comparison to previous results from March and September 2019 (P-1 and P-2, Table 1).

Groundwater samples were analysed for volatile organic compounds (VOCs) by EPA method 8260B. Sample handling and laboratory analysis was undertaken according to the procedures and limits presented in the Site Quality Assurance Project Plan (ENVIRON 2013).

2.2 Phase 1 Results

Table 1 provides the results of groundwater samples collected as part of the performance monitoring of the ERH system from P1 and P2 using low flow sampling procedures in March and September 2019 for comparison. **Table 2** provides the results of the low flow samples collected from P-1, P-2, X-C1, X-D1, X-E1, and X-E2 in April 2020. **Table 3** provides the results of the samples collected using HydraSleeve™ samplers from P-1, P-2, X-B3, X-B4, X-C1, X-C3, X-C4, X-D1, X-D2, X-D3, X-D4, X-E1, X-E2, and X-E3. These samples allow assessment of the variability in contaminant concentration across the well screen and are indicative of groundwater concentrations in the zone between approximately 4 to 40 feet below ground surface.

Figure 2 presents the groundwater concentration data in plan view across the Containment Area and indicates the variability with depth (~25 and 37 ft bgs).

These data have provided a spatially distributed assessment of whether dissolved phase concentrations are present above the performance criteria. Although these samples did not provide a direct assessment of the groundwater concentrations below 40 ft depth, they do indicate that there is an area of concentrations present above the performance criteria of 4,285 ug/L Total VOCs (TVOCs) across the central portion of the cell, which will be the focus for the investigation in Phase 2. Phase one was intended to, and did, narrow the area of the Cell that will be subject to further vertical delineation.

3. SCOPE OF WORK – PHASE 2

The investigation activities presented in this work plan include adaptive field investigation activities using a mini sonic drill rig to collect soil cores and groundwater samples for laboratory analysis of VOCs. A mini sonic drill rig was chosen to collect the soil cores and deep groundwater samples instead of the direct push technology (DPT) drilling method because we do not believe that DPT will be able to be advanced to a depth greater than approximately 35 ft bgs based on the DPT profiling that was conducted at the Site in 2014 (ENVIRON, 2014). The existing ERH equipment (e.g., extraction lines and cables) will need to be temporarily moved by the ERH contractor (McMillan-McGee Corp.) to a mutually agreed upon laydown area within the Third Site perimeter fence prior to commencing sampling activities to provide sufficient access for the drill rig to the proposed sampling locations so that the scope of work presented below can be safely completed.

3.1 Discrete Soil Sampling

Soil cores will be collected to provide a depth discrete profile of contaminant concentrations through the target treatment depth. Continuous core soil samples will be collected to a depth of 46 ft bgs using sonic drilling technology from fifteen borings, proposed soil and groundwater sample (PSGS) locations, as shown on **Figure 2**. Four of the fifteen PSGS locations were chosen to correlate with the soil core locations sampled in 2014 as part of the Supplemental Data Collection investigation (ENVIRON 2014). Ten of the remaining 11 PSGS locations were selected based on the results of the Phase1 groundwater sampling to provide additional coverage within the area of VOC concentrations greater than the performance criteria (shown on **Figure 2** as the isoconcentration lines). The location of remaining borehole, PSGS-15, will be determined based on the results of the previous 14 borehole and will be used to better define the extent of any exceedances identified. **Table 4** presents the rational for selecting each of the PSGS locations.

Continuous core soil samples will be collected from ground surface to a target depth of approximately 46 feet below ground surface (ft bgs). Soil cores will be screened in the field with a photoionization detector (PID) for the presence of VOCs. One soil sample will be collected from each 5-ft soil core from the portion of the core with the greatest PID response and retained for laboratory analysis. Soil samples will be collected using Terra Core® samplers and stored on ice for transport to the analytical laboratory under chain of custody procedures. Soil samples will be submitted for analysis of VOCs by EPA

method 8260. If soil cores from any boring and from any depth exhibit elevated PID readings (> 500 ppm) or there are any visual observation of DNAPL in the soil (oily phase on gloves or core liners, separate phase observed in soil pore spaces) the borehole will be abandoned at the depth and the borehole backfilled with hydrated bentonite or grout to surface. Special care will be taken in the vicinity of P1 where the groundwater sample from the deeper portion of the well (37 ft bgs) indicates the potential for DNAPL.

The proposed coring method advances an outer casing that remains downhole while the core is retrieved from the casing. Therefore, the base of the borehole remains isolated from the upper, previously cored, depth intervals. It is proposed that once the final core is collected from a depth of 46 ft bgs, the outer casing of the drill rig will be retracted to approximately 40 ft bgs to expose the lower 6 ft of the borehole. An attempt will be made at that time to collect a groundwater sample from 40-46 ft bgs using either a temporary well screen lowered through the casing or a groundwater grab sampler such as a Geoprobe SP22 sampler. A water level tape will be used to determine whether groundwater is entering the borehole, which will be continued over a period of up to three hours to allow sufficient water to collect a sample. If, during the three hour period, a sufficient volume of water has entered the borehole to facilitate collection of a groundwater sample, a sample will be collected for analysis of VOCs by EPA method 8260B. Sample handling and laboratory analysis will be undertaken according to the procedures and limits presented in the Site Quality Assurance Project Plan (ENVIRON 2013). The borehole will be abandoned after collection of a groundwater grab sample by backfilling the borehole with hydrated bentonite or grout.

3.2 Temporary Wells

If there is insufficient groundwater in a soil boring after three hours then a temporary well may be installed. Boring locations proposed for temporary wells will be selected based on field screening (PID) of core and the results of the Phase 1 groundwater sampling to provide a representative cross section of the refined area of investigation within the Cell. The proposed PSGS locations will allow for evaluation of VOC concentrations in the 40-46 ft bgs interval adjacent to P-1 and P-2 and near the former location of multi-port monitoring well CMT-1 (TS-01, **Figure 2**), where prior to ERH operations exhibited groundwater TVOC concentration of 122,174 µg/L at approximately 36 ft bgs (ENVIRON 2014). Temporary wells will be completed with a 5 ft PVC screen installed from 41 ft bgs to 46 ft bgs. The sand pack will be placed to 1 foot above the screened interval and the remainder of the borehole will be filled with hydrated bentonite or grout as the outer sonic rig casing is removed. At locations not selected for temporary well

installation, if there is insufficient water to collect a sample after 3 hours, the borings will be abandoned by backfilling with hydrated bentonite or grout.

REFERENCES

ENVIRON 2013. QAPP Addendum - *Quality Assurance Project Plan Addendum, Third Site, Zionsville, Indiana*. Submitted to: USEPA, Region 5. On behalf of: Third Site Trustees. Prepared by: ENVIRON. Dated February 2013.

ENVIRON 2014. DNAPL Containment Area *Supplemental Data Collection Report, Third Site Superfund Site, Zionsville, Indiana.* November 1, 2014: ENVIRON International Corporation.

Geosyntec 2020. *Third Site DNAPL Containment Area Sampling Work Plan Draft.* February 10, 2020: Geosyntec Consultants.

BANKERT POND

X-E2

X-E3

X-E1

X-D1

P-1

X-D3

X-D4

X-D2

X-C1

X-C3

X-C4

P-2

X-B4

X-B3

LEGEND

- SHEET PILE WALL
- PIEZOMETER
- MCMILLAN MCGEE CORP. EXTRACTION WELL

0 10

SCALE IN FEET

PLAN VIEW

(DURING DNAPL AREA ERH PHASE)

GROUNDWATER SAMPLING LOCATIONS, DNAPL CONTAINMENT AREA

THIRD SITE

985 SOUTH U.S. HIGHWAY 421

ZIONSVILLE, INDIANA

RAMBOLL

FIGURE 1

DRAFTED BY: CKL | DATE: 1/27/2020 | 1690016317

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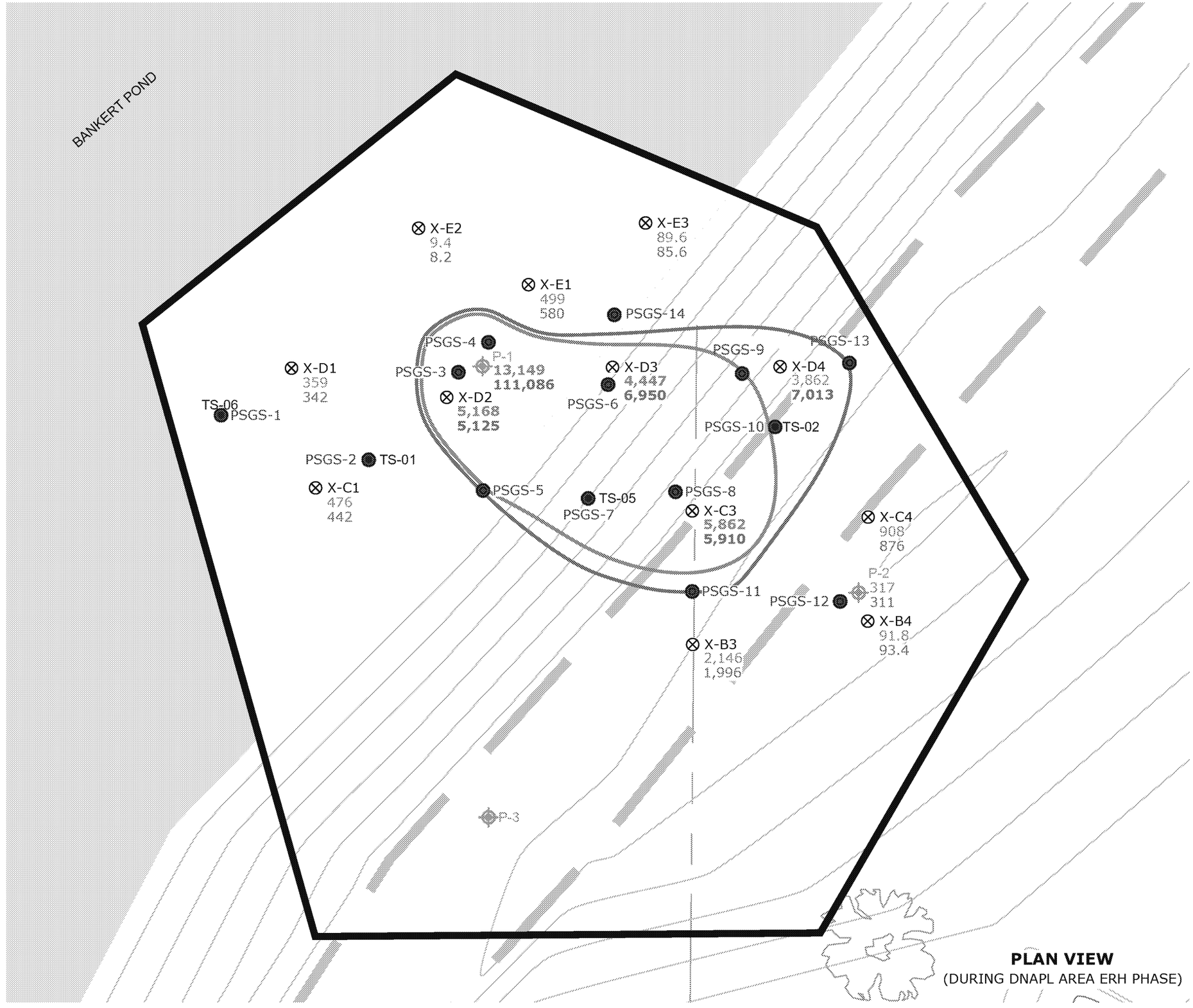

PLAN VIEW
(DURING DNAPL AREA ERH PHASE)

LEGEND

- SHEET PILE WALL
- PIEZOMETER
- MCMILLAN MCGEE CORP. EXTRACTION WELL
- 2014 SOIL BORING LOCATION
- PROPOSED SOIL/GROUNDWATER SAMPLE (PSGS) LOCATIONS
- TVOCs 4,285 µg/L ISOCONTOUR (AT ~25 FTBGS)
- TVOCS 4,285 µg/L ISOCONTOUR (AT ~37 FTBGS)

Performance Standards for ERH Treatment (Total VOCs)[3]	4,285

Notes:
1. TVOCs = Total Volatile Organic Compounds
2. FTBGS = Feet Below Ground Surface
3. Performance standards per Table 5 of the April 2018 Remedial Design Report prepared by McMillan-McGee Corp.
4. Sample depths reported in feet below ground surface.
5. Samples analyzed using EPA Method 8260.
6. All results in microgram per liter (µg/L).
7. **Bold** indicates result exceeds Performance Standards for ERH Treatment.
8. PSGS - 15 location to be determined based on results of other 14 locations
9. Groundwater data show on Figure 2 is also presented in Table 3.

0 10
SCALE IN FEET

APRIL 2020 GROUNDWATER ANALYTICAL RESULTS (µg/L) AND PROPOSED SAMPLING LOCATIONS, DNAPL CONTAINMENT AREA
THIRD SITE
985 SOUTH U.S. HIGHWAY 421
ZIONSVILLE, INDIANA

RAMBOLL

FIGURE
2

DRAFTED BY: CKL	DATE: 5/13/2020	1690016317

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TABLE *1*
***2019* Confirmation Groundwater Analytical Results**
(ug/L) DNAPL Containment Area
Third Site Superfund Site, Zionsville, Indiana

LOCATION	P-1		P-2		P-3		SUMP	
COLLECTION DATE	3/29/2019	9/5/2019	3/29/2019	9/5/2019	3/29/2019	9/5/2019	3/29/2019	9/5/2019
1,1-Dichloroethane	208	355	<10	<5	<10	<5	<10	<5
1,1-Dichloroethene	<1	995	<10	<5	<10	<5	<10	<5
cis-1,2-Dichloroethene	<1	2,630	2,150	766	131	70.8	634	262
trans-1,2-Dichlorothene	<1	59.3	44.2	10.2	<10	<5	35.8	10.9
Tetrachloroethene	2,240	1,480	84.6	103	<10	<5	113	5.3
1,1,1-Trichloroethane	<1	<5	<10	<5	<10	<5	<10	<5
1,1,2-Trichloroethane	<1	<5	<10	<5	<10	<5	<10	<5
Trichloroethene	21,000	15,200	446	258	39.0	<5	653	250
Vinyl Chloride	64.5	28.0	14.3	6.1	<10	2.3	<10	<5
Acetone	106	<100	<200	<100	220	<100	222	<100
Chlorobenzene	3.4	<5	<10	<5	<10	<5	<10	<5
Chloroethane	<2	11.0	<10	<5	<20	<5	<10	<5
Chloroform	<1	<5	<10	<5	<10	<5	<10	<5
Chloromethane	<2	<5	<10	<5	<20	<5	<10	12.1
2-Chlorotoluene	20.3	8.0	<10	<5	<10	<5	<10	<5
1,2-Dichlorobenzene	16,600	8,710	2,380	3,170	92.7	8.4	1,060	420
1,3-Dichlorobenzene	2.9	<5	15.3	<5	<10	<5	<10	<5
1,4-Dichlorobenzene	140	45.6	15	19.2	<10	<5	<10	<5
Ethylbenzene	1,620	860	127	134	<10	<5	102	23.4
Isopropylbenzene (Cumene)	100	37.5	<10	9.8	<10	<5	<10	<5
Napthalene	10.4	2.8	<10	<5	<10	<5	<10	<5
n-Propylbenzene	17.2	7.8	<10	<5	<10	<5	<10	<5
Toluene	228	87.0	10.3	9.0	<10	<5	<10	<5
1,2,4-Trichlorbenzene	4.3	<5	<10	<5	<10	<5	<10	<5
1,2,4-Trimethylbenzene	17.5	7.5	<10	<5	<50	<5	<50	<5
1,3,5-Trimethylbenzene	6.4	<5	<10	<5	<50	<5	<50	<5
Xylene (Total)	5,290	2,540	292	360	<30	<10	291	105
Total VOCs	**47,679**	**33,065**	**5,579**	**4,845**	483	82	3,111	1,089
Performance Standards for ERH Treatment (Total VOCs)[(1)]	4,285							

NOTES:
1. Performance standards per Table 5 of the April 2018 Remedial Design Report prepared by McMillan-McGee Corp.
2. Samples analyzed using EPA Method 8260.
3. All results in microgram per liter (ug/L)
4. Bold indicates exceeds Performance Standards for ERH Treatment

TABLE 2
Low-Flow Groundwater Analytical Results (ug/L)
DNAPL Containment Area
Third Site Superfund Site, Zionsville, Indiana

LOCATION	P-1	P-1 DUP	P-2	X-C1	X-D1	X-E1	X-E2
SAMPLE DEPTH[1]	31.5'	31.5'	31.5'	32.7'	31.3'	33.0'	33.0'
COLLECTION DATE	4/30/2020	4/30/2020	4/30/2020	4/29/2020	4/29/2020	4/30/2020	4/30/2020
1,1-Dichloroethane	209	198	<1	<1	<1	3.0	<1
1,1-Dichloroethene	330	307	<1	1.1	<1	5.3	<1
cis-1,2-Dichloroethene	2,750	2,460	85.3 J	298	296	290	6.6
trans-1,2-Dichlorothene	63.4	62.6	3.6	5.3	13.8	6.9	<1
Tetrachloroethene	54.7	61.1	<1	<1	1.8	<1	<1
1,1,1-Trichloroethane	<10	<10	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	<10	<10	<1	<1	<1	<1	<1
Trichloroethene	6,400	5,230	32.0	12.0	75.2	93.9	1.9
Vinyl Chloride	12.2	13.5	6.9	<1	30.8	19.2	<1
Bromomethane	<50	74.7	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	2,100 J	2,000 J	246 J	23.1 J	15.8 J	146 J	7.4 J
Chlorobenzene	<10	<10	<1	<1	<1	<1	1.2
Ethylbenzene	122	120	<1	<1	<1	<1	<1
Isopropylbenzene (Cumene)	53.3	56.6	<1	<1	<1	<1	<1
Toluene	13.0	19.1	<1	<1	<1	<1	<1
Xylene (Total)	198	209	3.6	<3	3.8	3.6	<3
Total VOCs	**12,306**	**10,812**	377	340	437	568	17.1
Performance Standards for ERH Treatment (Total VOCs)[2]	4,285	4,285	4,285	4,285	4,285	4,285	4,285

NOTES:

1. Sample depth reported in feet below ground surface.
2. Performance standards per Table 5 of the April 2018 Remedial Design Report prepared by McMillan-McGee Corp.
3. Samples analyzed using EPA Method 8260.
4. All results in microgram per liter (ug/L)
5. Bold indicates exceeds Performance Standards for ERH Treatment
6. J = Estimated concentration

TABLE 3
HydraSleeve Groundwater Analytical Results (ug/L)
DNAPL Containment Area
Third Site Superfund Site, Zionsville, Indiana

LOCATION	P-1		P-2		X-B3		X-B4		X-C1	
SAMPLE DEPTH[1]	24.6'	36.5'	25.6'	36.5'	24.6'	37.6'	24.6'	37.6'	25.0'	36.9'
COLLECTION DATE	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020
1,1-Dichloroethane	248	4,870	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	327	7,950	<1	<1	21.7	20.6	<1	<1	1.9	1.7
cis-1,2-Dichloroethene	2,990	10,700	97.4	107	460	471	41.8	42.4	416 J	386 J
trans-1,2-Dichlorothene	76.7	1,310	5.3	6.1	33.3	31.7	3.4	3.9	7.2	7.0
Tetrachloroethene	<50	6,040	<1	<1	7.0	5.9	<1	<1	<1	<1
1,1,1-Trichloroethane	<50	<50	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	<50	<50	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	7,220	26,700	30.9	29.4	1,450	1,310	9.5	9.5	15.1	14.2
Vinyl Chloride	<50	221	6.4	6.9	1.9	1.8	10.2	10.7	<1	<1
1,2-Dichlorobenzene	1,820	33,600	171	162	162	145	26.9	26.9	31.6	29.6
1,3-Dichlorobenzene	<50	<50	1.1	<1	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	<50	205	1.0	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	<50	<50	<1	<1	<1	<1	<1	<1	<1	<1
Chloroethane	<100	<100	<2	<2	<2	<2	<2	<2	<2	<2
Ethylbenzene	125	6,530	<1	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene (Cumene)	<50 UJ	336 J	<1 UJ	<1 UJ	<1 UJ	<1 UJ	<1 UJ	<1 UJ	<1 UJ	<1 UJ
Styrene	<50	234	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	<50	890	<1	<1	1.0	1.0	<1	<1	<1	<1
Xylene (Total)	342	11,500	3.5	<3	9.5	9.4	<3	<3	3.7	3.7
Total VOCs	**13,149**	**111,086**	317	311	2,146	1,996	91.8	93.4	476	442
Performance Standards for ERH Treatment (Total VOCs)[2]	4,285	4,285	4,285	4,285	4,285	4,285	4,285	4,285	4,285	4,285

NOTES:

1. Sample depth reported in feet below ground surface.
2. Performance standards per Table 5 of the April 2018 Remedial Design Report prepared by McMillan-McGee Corp.
3. Samples analyzed using EPA Method 8260.
4. All results in microgram per liter (ug/L)
5. Bold indicates exceeds Performance Standards for ERH Treatment
6. J = Estimated concentration
7. UJ = Estimated concentration, but below reporting limit

TABLE 3
HydraSleeve Groundwater Analytical Results (ug/L)
DNAPL Containment Area
Third Site Superfund Site, Zionsville, Indiana

LOCATION	X-C3			X-C4		X-D1		X-D2		
SAMPLE DEPTH[2]	24.7'	36.5'	36.5' DUP	24.7'	36.0'	24.7'	35.2'	24.5'	38.3'	38.3' DUP
COLLECTION DATE	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020
1,1-Dichloroethane	<5	<5	<5	<1	<1	<1	<1	33.1	29.0	28.6
1,1-Dichloroethene	30.6	33.5	34.7	2.3	2.3	<1	<1	55.1	43.1	43.2
cis-1,2-Dichloroethene	2,170 J	2,220 J	1,990	692	677	247	236	4,120	3,920	2,860
trans-1,2-Dichlorothene	61.0	64.1	73.5	30.1	30.7	12.0	11.3	79.4	68.5	70.2
Tetrachloroethene	26.3	30.8	28.0	<1	<1	1.7	1.5	<5	<5	5.3
1,1,1-Trichloroethane	<5	<5	<5	<1	<1	<1	<1	<5	<5	<5
1,1,2-Trichloroethane	<5	<5	<5	<1	<1	<1	<1	<5	<5	<5
Trichloroethene	1,980 J	2,100 J	1,780	28.2	25.8	59.1	55.2	600	690	692
Vinyl Chloride	<5	<5	<5	1.5	1.6	19.6	18.5	26.7	28.5	29.9
1,2-Dichlorobenzene	1,550 J	1,410	1,450	150	133	16.2	15.6	230	300	345
1,3-Dichlorobenzene	<5	<5	<5	<1	<1	<1	<1	<5	<5	<5
1,4-Dichlorobenzene	<5	<5	<5	<1	<1	<1	<1	<5	<5	<5
Chlorobenzene	<5	<5	<5	<1	<1	<1	<1	<5	<5	<5
Chloroethane	<10	<10	<10	<2	2.0	<2	<2	<10	<10	<10
Ethylbenzene	<5	5.7	5.7	<1	<1	<1	<1	<5	<5	<5
Isopropylbenzene (Cumene)	<5 UJ	<5	<5 UJ	<1 UJ	<1 UJ	<1	<1	<5	<5	<5 UJ
Styrene	<5	<5	<5	<1	<1	<1	<1	<5	<5	<5
Toluene	<5	<5	<5	<1	<1	<1	<1	<5	<5	<5
Xylene (Total)	44.5	45.7	47.0	4.0	4.0	3.7	3.6	23.5	46.3	45.5
Total VOCs	**5,862**	**5,910**	**5,409**	908	876	359	342	**5,168**	**5,125**	4,120
Performance Standards for ERH Treatment (Total VOCs)[3]	4,285	4,285	4,285	4,285	4,285	4,285	4,285	4,285	4,285	4,285

NOTES:

1. Sample depth reported in feet below ground surface.
2. Performance standards per Table 5 of the April 2018 Remedial Design Report prepared by McMillan-McGee Corp.
3. Samples analyzed using EPA Method 8260.
4. All results in microgram per liter (ug/L)
5. Bold indicates exceeds Performance Standards for ERH Treatment
6. J = Estimated concentration
7. UJ = Estimated concentration, but below reporting limit

TABLE 3
HydraSleeve Groundwater Analytical Results (ug/L)
DNAPL Containment Area
Third Site Superfund Site, Zionsville, Indiana

LOCATION	X-D3		X-D4		X-E1		X-E2			X-E3	
SAMPLE DEPTH[2]	24.9'	37.5'	24.7'	38.2'	24.5'	37.7'	24.0'	37.6'	37.6' DUP	24.0'	37.6'
COLLECTION DATE	4/29/2020	4/29/2020	4/29/2020	4/29/2020	4/29/2020	4/29/2020	4/29/2020	4/29/2020	4/29/2020	4/29/2020	4/29/2020
1,1-Dichloroethane	<5	<10	<5	<5	3.1	3.0	<1	<1	<1	1.7	1.4
1,1-Dichloroethene	60.4	66.0	11.1	13.0	4.1	3.6	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	2,200	3,550 J	2,770 J	5,770 J	264	236 J	3.2 J	3.4 J	3.5 J	65.8 J	63.5 J
trans-1,2-Dichlorothene	60.7	65.2	20.1 J	21.0 J	6.0	5.1 J	<1 UJ	<1 UJ	<1 UJ	2.2 J	2.1 J
Tetrachloroethene	<5	<10	7.7	8.8	<1	<1	<1	<1	<1	<1	<1
1,1,1-Trichloroethane	<5	<10	<5	<5	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	<5	<10	<5	<5	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	1,630	2,500	885	1,020	76.3	83.3	2.0	1.7	1.8	7.3	6.2
Vinyl Chloride	9.3	10.8	<5	<5	16.4	18.0	<1	<1	<1	9.7	9.5
1,2-Dichlorobenzene	459	648	137	142 J	125	220	3.1	2.1	2.0	2.9	2.9
1,3-Dichlorobenzene	<5	<10	<5	<5	<1	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	<5	<10	<5	<5	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	<5	<10	<5	<5	<1	<1	1.1	1.0	1.0	<1	<1
Chloroethane	<10	<20 UJ	<10	<10	<2	<2	<2	<2	<2	<2	<2
Ethylbenzene	<5	<10	5.1	6.6	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene (Cumene)	<5 UJ	<10	<5	<5	<1	<1	<1	<1	<1	<1	<1
Styrene	<5	<10	<5	<5	<1	<1	<1	<1	<1	<1	<1
Toluene	<5	<10	<5	5.2	<1	<1	<1	<1	<1	<1	<1
Xylene (Total)	27.7	110 J	25.7 J	26.3 J	3.6	10.6 J	<3 UJ	<3 UJ	<3 UJ	<3 UJ	<3 UJ
Total VOCs	**4,447**	**6,950**	3,862	**7,013**	499	580	9.4	8.2	8.3	89.6	85.6
Performance Standards for ERH Treatment (Total VOCs)[3]	4,285	4,285	4,285	4,285	4,285	4,285	4,285	4,285	4,285	4,285	4,285

NOTES:

1. Sample depth reported in feet below ground surface.
2. Performance standards per Table 5 of the April 2018 Remedial Design Report prepared by McMillan-McGee Corp.
3. Samples analyzed using EPA Method 8260.
4. All results in microgram per liter (ug/L)
5. Bold indicates exceeds Performance Standards for ERH Treatment
6. J = Estimated concentration
7. UJ = Estimated concentration, but below reporting limit

TABLE 4
Proposed Soil and Groundwater Sampling Locations Rationale
DNAPL Containment Area
Third Site Superfund Site, Zionsville, Indiana

Proposed Sampling Location	Rationale
PSGS 1	Correlate with the soil core location TS-06 sampled in 2014
PSGS 2	Correlate with the soil core location TS-01 sampled in 2014
PSGS 3	Location selected based on the results from X-D2 and P-1 from the Phase 1 groundwater sampling
PSGS 4	Location selected based on the results from P-1 from the Phase 1 groundwater sampling
PSGS 5	Location selected based on the results of the Phase1 groundwater sampling
PSGS 6	Location selected based on the results from X-D3 from the Phase 1 groundwater sampling
PSGS 7	Correlate with the soil core location TS-05 sampled in 2014
PSGS 8	Location selected based on the results from X-C3 from the Phase 1 groundwater sampling
PSGS 9	Location selected based on the results from X-D4 from the Phase 1 groundwater sampling
PSGS 10	Correlate with the soil core location TS-02 sampled in 2014
PSGS 11	Location selected based on the results of the Phase1 groundwater sampling
PSGS 12	Location selected based on the results from P-2 from the Phase 1 groundwater sampling
PSGS 13	Location selected based on the results from X-D4 from the Phase 1 groundwater sampling and to provide additional coverage towards sheet pile wall
PSGS-14	Location selected based on the results from X-D3 from the Phase 1 groundwater sampling to provide information to the north
PSGS-15	Location to be finalized based on results of PSGS-1 through PSGS-14 to better define the extent of any exceedances indentified one of the other 14 locaitons

Notes:
TS-0# indicates soil boring completed in 2014 as part of the Supplemental Data Collection investigation (ENVIRON 2014)
PSGS locations are shown on Figure 2